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CRP-001-CP3

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01/27/90
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Rueger et al. Examiner: N. Nutter
Serial No.: 422,699 Group Art Unit: 153
Filed: October 17, 1989 Attorney Docket: CRP-001-CP3
Title: OSTEOGENIC PROTEIN

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Washington, DC 20231

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Jan 17, 1990
Date of Signature
and of Mail Deposit

By Edmund R. Pitcher
Edmund R. Pitcher
Registration No. 27,829
Attorney for Applicant

LETTER TO THE OFFICIAL DRAFTSMAN

Dear Sir:

Enclosed is a copy of the Notice of Patent Drawing
Objection in the above-referenced application, and new
drawings, correcting the informalities.

Respectfully submitted,
LAHIVE & COCKFIELD

Edmund R. Pitcher
Edmund R. Pitcher
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Date: 1/17/90

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GROUP 153

TRADEMARK OFFICE

NOTICE OF PATENT DRAWINGS OBJECTION

Drawing Corrections and/or new drawings may only be submitted in the manner set forth in the attached letter, "Information on How to Effect Drawing Changes" PTO-1474.

A. The drawings, filed on 10-17-89, are objected to as informal for reason(s) checked below:

1. <input type="checkbox"/> Lines Pale.	11. <input type="checkbox"/> Parts in Section Must Be Hatched.
2. <input type="checkbox"/> Paper Poor.	12. <input type="checkbox"/> Solid Black Objectionable.
3. <input type="checkbox"/> Numerals Poor.	13. <input type="checkbox"/> Figure Legends Placed Incorrectly.
4. <input type="checkbox"/> Lines Rough and Blurred.	14. <input type="checkbox"/> Mounted Photographs.
5. <input type="checkbox"/> Shade Lines Required.	15. <input type="checkbox"/> Extraneous Matter Objectionable. [37 CFR 1.84 (1)]
6. <input type="checkbox"/> Figures Must be Numbered.	16. <input type="checkbox"/> Paper Undersized; either 8½" x 14", or 21.0 cm. x 29.7 cm. required.
7. <input checked="" type="checkbox"/> Heading Space Required. Fig. 1A-1	17. <input type="checkbox"/> Proper A4 Margins Required: TOP 2.5 cm. <input type="checkbox"/> RIGHT 1.5 cm. <input type="checkbox"/> LEFT 2.5 cm. <input type="checkbox"/> BOTTOM 1.0 cm.
8. <input type="checkbox"/> Figures Must Not be Connected.	18. <input checked="" type="checkbox"/> Other: Fig. legends small must be Fig. (1A-1)(3.2) big

10. Double-Line Hatching Objectionable.

18. Other:

B. The drawings, submitted on 10-17-89, are so informal they cannot be corrected. New drawings are required. Submission of the new drawings MUST be made in accordance with the attached letter.

Cancel

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GGAGGTATAGGAGCTCTTCGATTTAGCAAACCAAGGAGTCCGAAGATCTAAGGAGAGC
TGGGGTTTGACTCCGAGAGCTCGAGCAGTCCCCAAGACCTGGTCTTGACTCACGAGTTA
GACTCCACTCAGAGGCTGACTGTCTCAGGGCTACACCTTAAGGGCAGACACTGGGCTC
AAGCAGACTGCCTTCTATATGGATGAGCCTCACAGGGCAGCAGTTGGATGGG
TGAGGTTGGCTGAGACATCAGAAACCAAGTCAAATGCCTCAACCAGTAGAAAATT
CACCAAGCCCGAGAGCTAAGGTTGGGACATTAGGTTGGTGTACCCAGGAGCTCAAC
AGTGTCTCTGAGCCCCAGCTCTGCCCCACCCACCATCTCAGTGCTGCTCCTC
TCAAGGCCACAGCTGAGTGGCCAGGGGGCTTCATTATTTTGCTCTGGCAGTAG
GAGGAAGAGAATGAATGTCTCCATGGGTCTTTAGGAATGTGGGAACCTTCCAG
AAGTCTCTATGTTAGTTGTGGGTCACTTGCCCCCTCTGAACCAACTTCCGTAC
TCCGGACAGGATGTGACTGTGAGCTTAGCTTGGGGATCTAATAGTGACTTACAAA
GCCTTTGAGAAGGTGACATTGGAACCAAGGCTTGAGCAGACACAACAAAGATTGAG
GAGGGGATTGCAAGGTGGAGGAAACGGCACATGCAAGAGCCTGCGTGGAGTGAGCTG
GTGTTGGTCAATCAGTTGTCAGAGCACACCGGCCCCGTCACTGAGGGCACAGCCTGGG
TGCTCTGAGTATGACAGAGAGCCCCCTGGGAAGTTGAGTTGGAGGAAGACAGGTATGA
CTAGGAAAAAAGCAATCCCTCTGTTGTGGGTGGAAGGAAGGTTGCACTGTGTGAGAG
AGAGACAAGACAGACAGACAGACACTTCTCAATGTTACAAGTGCTCAGGCCCTGACCCG
AATGCTTCCAATTACGTTAGTCTGGAAACCCCTGTATCATTTCACTACTCAAAGA
AACCTGGGAGTGTCTCTGAAAGGTATCAGGTTTGACTCTCTGCTGCTCATTT
CTTCTGCTGGTGGTGTGATGGTTGCTTGTCCCAGGGCTGTCCCAGTCATCCTGCCCC
CTGAGAGGGATGAGTGTGTTGGGCTCACGAGTTGAGGGTGTTCATAAGCAGATCTCT
TTGAGCAGGGCCTGCACTGGCCTGTGTGAGGCTGGAGGGGTTGATTCCTTATGG
AATCCAGGCAGATGTAGCATTAAACAACACACGTGTATAAAGAAACAGTGTCCGAG
AAGTTCCAGAAAGTATTATGGATAAGACTACATGAGAGAGGAATGGGCATTGGCAC
TCCCTTAGAGGGCCTTGCTGGGGTAGAAATGAGTTAAGGCAGGTTAGACCTCGA
ACTGGCTTTGAATGGGAAATTACCCCCCAGCCGTTGTGCTTCATTGCTGTTACA
TCACTGCTTAAGATGGAGGAACITTGATGTGTGTTCTTCTCCTACTGGCCTCT
GCTCTTCACTCCTGTCAAT

;intron=exon

GCAGAGAACAGCAGCAGCAGCACCAGAGGCAGGCCGTGA

A E N S S S D Q R Q A C

AGAACGACAGCAGCTGTATGTCAGCTCCGAGACCTGGCAG

K K H E L Y V S F R D L G W Q

;exon=intron

GTAAGGGCTGGCTGG

GTCGTCTTGGGTGAGGGCCCTCTGGCGTGGCTCCCACAGGCAGCAGGGTGTGCTCA
GTCTTGTCTCATCTGCACTGCAAGTAAAGACTCCAGTATCAAGTGGCCTCGCTAGGG
GTACTGGCTAAGGATACAGGG.....
GGGAGCCAGCATGGGTGATGCCATTATGAGTTATTAGCCTCTGGCAGGTGGGAAAC
CGAGGCATGGAGTTGTTAAGGTGAACTGCCAGTGTGACCACCTAGTGGGTAGAG
CTGATGATTGCTCACACCCGGAGCTCTCTGTGCCGCTGTCCAGAAGACACAGC
CATGGATGTCCATTAGGATCAGCCAAGCCCCGTCTGTCCCTCATTTTATTTATGT
TTTTAGAAATGGGTCTTGCTCTGTCACCCAGGCTGGGTGCACTGGGTGATCATAGC
TCACCGCAGCTTGACGCCGTCTCCACTCAGTCACTAAGCTGGACTATAGGCCAAG
ACTATAGAGTGGCTCTTCCATTCTTGGGACCATGAGAGGCCACCCATGTTCT
GCCCTGCTGGGCCCTGCTCAGAAGGCATGGTCTGAGGCTTCAACCTGGTGTGAG
CCTCGTGGTGGTTCTTCAGCATGGGTGGATGCTGTGCTCAGGCTCTGCATGGT
TTCCCACACTCTCTCCTCAG

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FIG. 1A-1

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        GACTGGATCATCGCGCCTGAAGGCTACGCCGCCT
        D W I I A P E G Y A A
ACTACTGTGAGGGGGAGTGTGCCCTCCCTCTGAACTCCTACATGAACGCCACCAACCACG
Y Y C E G E C A F P L N S Y M N A T N H
CCATCGTGCAGACGCTG
A I V Q T L
;exon=intron

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GTGGGTGTACGCCATCTGGGTGTGGTCACCTGGGCCGGC
 AGGCTGGGGGCCACCAGATCTGCTGCCATCCAAGCTGGGCCTGAGTAGATGTCAGCCC
 ATTGCCATGTCATGACTTTGGGGCCCCCTTGCAGCTTAAAGGGAGGATATACTTCGACCTGGAGTCTGATTT
 CTTATGACTGGTTGGTATAAAAGGGAGGATATACTTCGACCTGGAGTCTGATTT
 CTCTAAATTAAAGTAACCTAAAGGGAGGATATACTTCGACCTGGAGTCTGATTT
 GTGGGTGCTGGTTACGGTCTAACAGGACTGGGCCCTGCTTCAATTTCAGTAGAGGA
 AACAGGTAACAGATGAGAAATTCACTGAGGGGACAGTGTACAGAAGGGCCAGCAG
 GATAATGGGATGGAGAGATGAGTGGGACCATGGGCCATTCAAGTTAAATTCACTGCG
 GGTACCAAGGAAGATTCCATGTGATAATGAGATTACGTGCCAGTCAGGGACACTCA
 GTAGGTGTTATTCTGCTGCCAACAGAACCATAGTTGATAAGAGCTGTAGGGATT
 TGTCTTTGCTAGAACATCCAAGGTTCAAGGACCTGGTTATGTAAGCTCCCTGTCATGAA
 CATCATCTGAGCCTTCCTGCCACTGTACATCCACCCCTGCCCTGAATGCTCTAGTGA
 AGAGAGCTCACTACCAAGGACTACCTCCCTCTTCAATTAGTAATCTGCCCTCTCTTTC
 TTGCTCTCTGCTGTGTTAAGTCTGGAGAAAAATCTCATCTATCCCTTCAATTGAT
 TCTGCTCTTGAGGGCAGGGTTTTGTTCTTGTGTTTTTAAGTGTGTTGTTTC
 CAAAGCCCTGCTCCCTCTCAATTGAAACTTCAAAGCCCTCATGGGATGTAAGGTCC
 TTAGGCTGAAACAGAAGAGTCTCCCCAACCTGTTCCCTGGCTGGATGTCGTGCTG
 TGCCAGTATCCCCTGAAAGGTGCCAGGCATGTCTCCCGCTGCCAGGGACACATCTCT
 ATCCCTCCAACCCCTGCCATGCCATGGACACAGGAGTGCCATGCCCTGTGTC
 ACCTACTTCCATCAGTATTTCACAGAGATCTGCAGGATCAAAGTGAATTCTCCAGGGAT
 TGTGAAATGATGCGATTGTGGTATGTTAAAGGGGCAACTCTCTAGAGAGTCTCT
 GATGAAATGCTCCAGGAAATGAGCTGATGGCTGAAATTGCTTAAATCATTCAAG
 TGAGGAGCAGGGGGAAAGGGTATGGATGTTAAGAGTTGAAATTGTCATCATAAAAT
 TGTAAAAGCATGCTGGCCTATGTCAGCAGTCACAGGCTGGAGGGGGTAACAGAGTGC
 GTCACTGATGTCAGCCTGGCACCTACAGTTGCTGAAACAGTGGCAGATCTGTAACACT
 AACAAACAGGACAGTGGATCTGGCCCTGCTTGAACAGTGGCAGATCTGTAACACT
 GATCTGGTTGGCTGCCGTAGCTTAGTTGAGTGGGGCTTCCCTAGTTGCTTAGT
 CCCCCTGCTATTCCCTATTGCTTACCTCGGTCTATTGCTTATCAGTGGACTCACGAGG
 CACTCATAGGCATTGAGTCTATGTTGCCCTGTCACATCCTCTGTAAGGTGCAGAGAA
 GTCCATGAGCAAGATGGGACACTCTAGTGGGCTCAAGTCAGGGACACTATTCA
 GCAACTACAGTGCACAGGGCAGTTCCCAACAGAGAAATTACCTGGCTCTGAATGTC
 GGGATCTGGCTTCCCTGCTTAAATGTTAAGGAAACCTCTATGCTTGTGCTGCAA
 ACAGGGATAATCCAGAACTGAGTTGCTCATGTAAGTGTCTTAGAACAGGGAGTGT
 CTTGGGGAGTGTCACTGCACTGAGTCATTCAATTGCCAGACAGGGATGTTCTTATAGAA
 CGTGGAGGCCAGTTAGAACGACTCACCGCTCTCACCACTGCCATGTTGGTGTGTT
 TTCAAG
 ;intron=exon
 GTCCACTTCATCAACCCGGAAACGGTGCCCAAGCCCTGCTGTGCCACGCAGC
 V H F I N P E T V P K P C C A P T Q
 TCAATGCCATCTCCGCTCTACTTCGATGACAGCTCAACGTCATCTGTAAGAAATACA
 L N A I S V L Y F D D S S N V I L K K Y
 GAAACATGGTGGTCGGGCCCTGGCTGCCACTAGTCCTCGAGAATTCA
 R N M V V R A C G C H

FIG. 1A-2

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10 20 30 40 50 60
 GGTGCGGGCCCGGAGCCCCGGAGCCCGGGTAGCGCGTAGAGCCGGCGCATGCACGTGCGC
 M H V R
 70 80 90 100 110 120
 TCACTGCGAGCTGGGGCGCCACAGCTTCGTGGCGCTCTGGGCACCCCTGTTCTGCTGCTG
 S L R A A A P H S F V A L W A P L F L L
 130 140 150 160 170 180
 CGCTCCGCCCTGGCCGACTTCAGCCTGGACAACGAGGGTAGCGACTCGAGCTTCATCCACCGG
 R S A L A D F S L D N E V H S S F I H R
 - - - - -
 190 200 210 220 230 240
 CGCCTCCGCAGCCAGGAGCGGGAGATGCAGCGCGAGATCCTCTCCATTGGGCTTG
 R L R S Q E R R E M Q R E I L S I L G L
 250 260 270 280 290 300
 CCCCCACCGCCCGCGCCCGCACCTCCAGGGCAAGCACAACCTGGCACCCATGTTCATGCTG
 P H R P R P H L Q G K H N S A P M F M L
 310 320 330 340 350 360
 GACCTGTACAACGCCATGGCGGTGGAGGGAGGGCGGGGGCCGGCCAGGGCTCTCC
 D L Y N A M A V E E G G G P G G Q G F S
 370 380 390 400 410 420
 TACCCCTACAAGGCCGTCTCAGTACCCAGGGCCCCCTCTGGCCAGCCTGCAAGATAAGC
 Y P Y K A V F S T Q G P P L A S L Q D S
 430 440 450 460 470 480
 CATTTCCTCACCGACGCCGACATGGTCATGAGCTTCGTCAACCTCGTGGACATGACAAG
 H F L T D A D M V M S F V N L V E H D K
 490 500 510 520 530 540
 GAATTCTCCACCCACGCTACCACCATCGAGAGTTCCGGTTGATTTCCAAGATCCCA
 E F F H P R Y H H R E F R F D L S K I P
 550 560 570 580 590 600
 GAAGGGGAAGCTGTCACGGCAGCCGAATTCGGATCTACAAGGACTACATCCGGGAACCGC
 E G E A V T A A E F R I Y K D Y I R E R
 610 620 630 640 650 660
 TTGACAAATGAGACGCTTCCGGATCAGCGTTTATCAGGTGCTCCAGGAGCAGTGGCAGG
 F D N E T F R I S V Y Q V L Q E H L G R
 670 680 690 700 710 720
 GAATCGGATCTTCCCTGCTCGACAGCCGTACCCCTCTGGGCCTCGGAGGGCTGGCTG
 E S D L F L L D S R T L W A S E E G W L
 730 740 750 760 770 780
 GTGTTTGACATCACAGCCACCAGCAACCACTGGGTGGTCAATCCGCGCACAACTGGGC
 V F D I T A T S N H W V V N P R H N L G
 790 800 810 820 830 840
 CTGCAGCTCTGGTGGAGACGCTGGATGGCAGAGCATCAACCCCAAGTTGGCGGGCCTG
 L Q L S V E T L D G Q S I N P K L A G L
 850 860 870 880 890 900
 ATTGGGGGGCACGGGGCCCCAGAACAGCAGCCCTCATGGTGGCTTCTCAAGGCCACG
 I G R H G P Q N K Q P F M V A F F K A T
 910 920 930 940 950 960
 GAGGTCCACTTCCCGCAGCATCCGGTCCACGGGGAGCAAACAGCCAGCCAGAACCGCTCC
 E V H F R S I R S T G S K Q R S Q N R S
 *
 970 980 990 1000 1010 1020
 AAGACGCCCAAGAACCGAGGAAGCCCTGCGGATGGCCAACGTGGCAGAGAACAGCAGCAGC
 K T P K N Q E A L R M A N V A E N S S S

FIG. 1B-1 OP1 cDNA

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1030 1040 1050 1060 1070 1080
GACCAGAGGCAGGCCTGTAAGAACGACGAGCTGTATGTCAGCTCCGAGACCTGGCTGG
D Q R Q A C K K H E L Y V S F R D L G W
1090 1100 1110 1120 1130 1140
CAGGACTGGATCATCGCCCTGAAGGCTACGCCCTACTACTGTGAGGGGGAGTGTGCC
Q D W I I A P E G Y A A Y Y C E G E C A
1150 1160 1170 1180 1190 1200
TTCCCTCTGAACCTCCTACATGAACGCCACCAACCACGCCATCGTCAGACGCTGGTCCAC
F P L N S Y M N A T N H A I V Q T L V H
1210 1220 1230 1240 1250 1260
TTCATCAACCCGGAAACGGTGCCAAGCCCTGCTGTGCCACGCAGCTCAATGCCATC
F I N P E T V P K P C C A P T Q L N A I
1270 1280 1290 1300 1310 1320
TCCGTCCCTCACTTCGATGACAGCTCCAACGTCACTCTGAAGAAATACAGAAAATGGTG
S V L Y F D D S S N V I L K K Y R N M V
1330 1340 1350 1360 1370 1380
GTCCGGGCCTGGCTGCCACTAGCTCCTCCGAGAATTCAGACCCCTTGGGGCCAAGTTT
V R A C G C H *
1390 1400 1410 1420 1430 1440
TTCTGGATCCTCCATTGCTCGCCTTGGCCAGGAACCAGCAGACCAACTGCCTTTGTGAG
1450 1460 1470 1480 1490 1500
ACCTTCCCCTCCCTATCCCCAACTTTAAAGGTGTGAGAGTATTAGAACATGAGCAGCA
1510 1520 1530 1540 1550 1560
TATGGCTTTGATCAGTTTCAGTGGCAGCATCCAATGAACAAGATCCTACAAGCTGTG
1570 1580 1590 1600 1610 1620
CAGGCAAAACCTAGCAGGAAAAAAACACGCATAAAGAAAAATGCCGGGCCAGGTCA
1630 1640 1650 1660 1670 1680
TTGGCTGGGAAGTCTCAGCCATGCACGGACTCGTTCCAGAGGTAATTATGAGGCCCTAC
1690 1700 1710 1720 1730 1740
CAGCCAGGCCACCCAGCGTGGGAGGAAGGGGGCGTGGCAAGGGGTGGGCACATTGGTGT
1750 1760 1770 1780 1790 1800
CTGTGCAAGGAAAATTGACCCGGAAGTCCCTGTAATAATGTCACAATAAAACGAATG
1810 1820
AATGAAAAAAAAAAAAAA

FIG. 1B-2 OPI CDNA

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CONSENSUS PROBE	20	30	40	50	60	70
GATCTTAATGGGCTGTACGTGGACTTCCAGCGCGACGTGGCTGGGACGACTGGATCATCGCCCCCGTCG	***	***	*****	*****	*****	*****
TGTAAGAACGAGCTGTATGTCAGCTTCCGAGACCTGGCTGGCAGGACTGGATCATCGCCCTGAAG	OP 1	28	38	48	58	68
OP 1	78					88
80	90	100	110	120	130	140
ACTTCGACGCCCTACTACTGCTCCGGAGCCTGCCAGTCCCCCTCTGCGGATCACTTCAACAGCACCAACCA	***	*****	**	*****	**	*****
GCTACGCGCGCTACTACTGTGAGGGGGAGTGTGCCCTCCCTCTGAACCTCATGAACGCCACCAACCA	98	108	118	128	138	148
GCTACGCGCGCTACTACTGTGAGGGGGAGTGTGCCCTCCCTCTGAACCTCATGAACGCCACCAACCA	158					
150	160	170	180	190	200	210
CGCCCGTGGTGCAGACCCCTGGTGAACAACATGAACCCCCGGCAAGGTACCCAAGGCCCTGCTGCGTGCACC	****	*****	***	*****	*****	*****
CGCCCATCGTGCAGACGCTGGTCCACTTCATCAACCCGGAAACGGTGCCCAAGGCCCTGCTGCGCCACG	168	178	188	198	208	218
CGCCCATCGTGCAGACGCTGGTCCACTTCATCAACCCGGAAACGGTGCCCAAGGCCCTGCTGCGCCACG	228					
220	230	240	250	260	270	280
GAGCTGTCCGCCATCAGCATGCTGTACCTGGACGAGAATTCCACCGTGGTGTGAAGAACTACCAGGAGA	****	*****	**	***	***	*****
CAGCTCAATGCCATCTCGTCCCTACTTCGATGACAGCTCAACGTCATCCTGAAGAAATACAGAAACA	238	248	258	268	278	288
CAGCTCAATGCCATCTCGTCCCTACTTCGATGACAGCTCAACGTCATCCTGAAGAAATACAGAAACA	298					
290	300	310				
TGACCGTGGTGGGCTGCGGCTGCCGCTAACGTGCA	***	***	*****	***		
TGGTGGTCCGGGCGTGTGGCTGCCACTAGCTCT	308	318	328			

FIGURE 1C

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10 20 30 40 50 60
 TCGACTCTAGAGTGTGTCAAGCACTGGCTGGGACTTCTTGAACCTGCAGGGAGAATA
 70 80 90 100 110 120
 ACTTGCACCCCACTTGCGCCGGTGCCTTGCCCCAGCGGAGCCTGCTCGCCATCTC
 130 140 150 160 170 180
 CGAGCCCCACCGCCCCCTCCACTCCTCGGCCCTGCCGACACTGAGACGCTGTTCCCAGCG
 190 200 210 220 230 240
 TGAAAAGAGAGACTGCGCGGCCGGCACCCGGAGAAGGGAGGAGGAAAGAAAAGGAACGG
 250 260 270 280 290 300
 ACATTGCGTCTTGCAGGCTTGCACAGTGGACAGTTTCCATGTGGACGCTTTCAA
 310 320 330 340 350 360
 TGGACGTGTCCCCCGCTGCTTCTTAGACGGACTGCCTCTAAAGGTCGACCATGGTG
 M V
 370 380 390 400 410 420
 GCCGGGACCCGCTGTCTTCTAGCGTTGCTGCTTCCCCAGGTCTCTCTGGCGGCCGGCT
 A G T R C L L A L L P Q V L L G G A A
 430 440 450 460 470 480
 GGCCTCGTCCGGAGCTGGGCCGCAGGAAGTTCGCGGCCGCTCGTCGGGCCGCCCTCA
 G L V P E L G R R K F A A A S S G R P S
 490 500 510 520 530 540
 TCCCAGCCCTCTGACGAGGTCTGAGCGAGTTCGAGTTGCCGCTGCTCAGCATGTTGGC
 S Q P S D E V L S E F E L R L L S M F G
 550 560 570 580 590 600
 CTGAAACAGAGACCCACCCCCAGCAGGGACGCCGTGGTCCCCCTACATGCTAGACCTG
 L K Q R P T P S R D A V V P P Y M L D L
 610 620 630 640 650 660
 TATCGCAGGCACTCGGGTCAGCCGGCTCACCCGCCAGACACCACCGGTTGGAGAGGGCA
 Y R R H S G Q P G S P A P D H R L E R A
 670 680 690 700 710 720
 GCCAGCCGAGCCAACACTGTGCGCAGCTCCACCATGAAGAATCTTGAAGAACTACCA
 A S R A N T V R S F H H E E S L E E L P
 730 740 750 760 770 780
 GAAACGAGTGGAAAACAACCCGGAGATTCTCTTTAATTAAAGTTCTATCCCCACGGAG
 E T S G K T T R R F F F N L S S I P T E
 790 800 810 820 830 840
 GAGTTTATCACCTCAGCAGAGCTTCAGGTTTCCGAGAACAGATGCAAGATGCTTAGGA
 E F I T S A E L Q V F R E Q M Q D A L G
 850 860 870 880 890 900
 AACAAATAGCAGTTCCATACCGAATTAAATTATGAAATCATAAAACCTGCAACAGCC
 N N S S F H H R I N I Y E I I K P A T A
 910 920 930 940 950 960
 AACTCGAAATTCCCCGTGACAGTCTTGGACACCAGGTTGGTAATCAGAATGCAAGC
 N S K F P V T S L L D T R L V N Q N A S
 970 980 990 1000 1010 1020
 AGGTGGAAAGTTTGATGTCACCCCGCTGTGATGCCGTGGACTGCACAGGGACACGCC
 R W E S F D V T P A V M R W T A Q G H A
 1030 1040 1050 1060 1070 1080
 AACCATGGATTCTGGTGGAAAGTGGCCACTTGGAGGAGAAACAAGGTGTCTCAAAGAGA
 N H G F V V E V A H L E E K Q G V S K R

FIG. 2-1

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1090 1100 1110 1120 1130 1140
CATGTTAGGATAAGCAGGTCTTGACCCAAGATGAACACAGCTGGTCACAGATAAGGCCA
H V R I S R S L H Q D E H S W S Q I R P
1150 1160 1170 1180 1190 1200
TTGCTAGTAACCTTTGGCCATGATGGAAAAGGGCATCCTCTCCACAAAAGAGAAAAACGT
L L V T F G H D G K G H P L H K R E::K R
1210 1220 1230 1240 1250 1260
CAAGCCAAACACAAACAGCGGAAACGCCCTAACGCTGTAAGAGACACCCTTGTAC
Q A K H K Q R K R L K S S C K R H P L Y
1270 1280 1290 1300 1310 1320
GTGGACTTCAGTGACGTGGGGTGGAAATGACTGGATTGTGGCTCCCCCGGGGTATCACGCC
V D F S D V G W N D W I V A P P G Y H A
1330 1340 1350 1360 1370 1380
TTTACTGCCACGGAGAACGCCCTTCTGGCTGATCATCTGAACCTCAACTAACAT
F Y C H G E C P F P L A D H L N S T N H
1390 1400 1410 1420 1430 1440
GCCATTGTTAGCGTTGGTCAACTCTGTTAACCTAACGATTCTAAGGCATGCTGTGTC
A I V Q T L V N S V N S K I P K A C C V
1450 1460 1470 1480 1490 1500
CCGACAGAACTCAGTGCTATCTCGATGCTGTACCTGACGAGAACGAGTTGTATT
P T E L S A I S M L Y L D E N E K V V L
1510 1520 1530 1540 1550 1560
AAGAACTATCAGGACATGGTTGTGGAGGGTTGGGGTGTGCGCTAGTACAGCAAAATTAAA
K N Y Q D M V V E G C G C R *
1570 1580 1590
TACATAAAATATATATATATATATATTTAGAAAAAGAAAAAAA

FIG. 2-2

10	20	30	40	50	60
CTCTAGAGGGCAGAGGAGGGAGGGAGGGAGGGAGGGAGGCCTGGAGCCGGCCGGAAAGCTA					
70	80	90	100	110	120
GGTAGGTGCGCATCGAGCTGAGGGACGCGAGCGCTGAGACGCCGCTGCTGCCGGCTG					
130	140	150	160	170	180
AGTATCTAGCTGTCTCCCGATGGGATTCCCGTCCAAGCTATCTCGAGCCTGCAGCGCC					
190	200	210	220	230	240
ACAGTCCCCGGCCCTCGCCCAGGTTCACTGCAACCCTGAGGTCCCCAGGAGCTGCTG					
250	260	270	280	290	300
CTGGCGAGCCCGCTACTGCAGGGACCTATGGAGCCATTCCGTAGTGCCATCCCGAGCAAC					
310	320	330	340	350	360
GCACGTGCTGCAGCTCCCTGAGCCTTCCAGCAAGTTGTTCAAGATTGGCTGTCAAGAA					
370	380	390	400	410	420
TCATGGACTGTTATTATGCTTGTTCGTCAAGACACCATGATTCCTGGTAACCGA					
			M I P G N R		
430	440	450	460	470	480
ATGCTGATGGTCGTTTATTATGCCAAGTCCTGCTAGGAGGGCGCAGCCATGCTAGTTG					
M L M V V L L C Q V L L G G A S H A S L					
490	500	510	520	530	540
ATACCTGAGACGGGGAGAAAAAAAGTCGCCGAGATTCAAGGCCACGCCGGAGGAGCCGC					
I P E T G K K K V A E I Q G H A G G G R R					
550	560	570	580	590	600
TCAGGGCAGAGCCATGAGCTCCTGCGGGACTTCGAGGCAGACACTTCTGCAGATGTTGGG					
S G Q S H E L L R D F E A T L L Q M F G					
610	620	630	640	650	660
CTGGCGCCGCCGCCGAGCCCTAGCAAGAGTGGCGTATTCCGGACTACATGCGGATCTT					
L R R R P Q P S K S A V I P D Y M R D L					
670	680	690	700	710	720
TACCGGCTTCAGTCTGGGGAGGAGGAGGAAGAGCAGATCCACAGCACTGGTCTTGAGTAT					
Y R L Q S G E E E E E Q I H S T G L E Y					
730	740	750	760	770	780
CCTGAGCGCCCGGCCAGCCGGCAACACCGTGAGGAGCTCCACCACGAAGAACATCTG					
P E R P A S R A N T V R S F H H E E H L					
790	800	810	820	830	840
GAGAACATCCCAGGGACCAAGTGAAACTCTGTTTCGTTCCCTTTAACCTCAGCAGC					
E N I P G T S E N S A F R F L F N L S S					
850	860	870	880	890	900
ATCCCTGAGAACGAGGTGATCTCCTCTGCAGAGCTCGGCTCTCCGGAGCAGGTGGAC					
I P E N E V I S S A E L R L F R E Q V D					
910	920	930	940	950	960
CAGGGCCCTGATTGGAAAGGGCTTCCACCGTATAAACATTATGAGGTTATGAAGCCC					
Q G P D W E R G F H R I N I Y E V M K P					
970	980	990	1000	1010	1020
CCAGCAGAAGTGGTGCCTGGCACCTCATCACAGACTACTGGACACAGAGACTGGCCAC					
P A E V V P G H L I T R L L D T R L V H					
1030	1040	1050	1060	1070	1080
CACAATGTGACACGGTGGAAACTTTGATGTGAGCCCTGCCGTCTCGCTGGACCCGG					
H N V T R W E T F D V S P A V L R W T R					
1090	1100	1110	1120	1130	1140
GAGAACGCAAACATGGCTAGCATTGAGGTGACTCACCTCCATCAGACTCGGACC					
E K Q P N Y G L A I E V T H L H Q T R T					

FIG. 3-1

1150	1160	1170	1180	1190	1200
CACCA	GGGCC	A	GGGAG	GGGAA	TTGGGCC
H	Q	G	Q	H	W
1210	1220	1230	1240	1250	1260
CAG	CTCCGG	CCCCTC	CTGGT	CAC	CTGGG
Q	L	R	P	L	D
1270	1280	1290	1300	1310	1320
CGCCGG	AGGGCCA	AAGCGT	AGCC	TAAGC	ACTCAC
R	R	A	:	K	R
1330	1340	1350	1360	1370	1380
AACTG	CCGGGCC	CACTCG	CTCTATG	TGGACTTC	AGCGATG
N	C	R	R	H	S
1390	1400	1410	1420	1430	1440
GTGG	CCCCACC	AAGGCT	ACCAGGC	CTTCTA	CTGGC
V	A	P	P	G	Y
1450	1460	1470	1480	1490	1500
GACCAC	CTCAACT	CAACCA	ACCATGCC	ATTGTG	CAGACCC
D	H	L	N	S	T
1510	1520	1530	1540	1550	1560
AGTAT	CCCCAAAGC	CTGTGTG	CCCCACTG	AACTGAG	TGCCATCTC
S	I	P	K	A	C
1570	1580	1590	1600	1610	1620
GATGAG	TATGATA	AGGTGG	ACTGAAA	AAATTATC	CAGGAGATGG
D	E	Y	D	K	V
1630	1640	1650	1660	1670	1680
TGCCG	CTGAGAT	CAGGC	AGTC	CTTGAGG	ATAGACAGA
C	R	*			
1690	1700	1710	1720	1730	1740
CAC	ATACACC	ACACAC	ACACAC	ACACAC	ACACAC
1750	1760	1770	1780	1790	1800
TTATAG	ATGGACT	TTTATTT	TTA	AAAAAA	AAAAAA
1810	1820	1830	1840	1850	1860
CAC	CTTGAC	CTTATTT	TATGACT	TTACGTG	CAAATGTTG
1870	1880	1890	1900	1910	1920
TGAC	AAAATAT	TTTATA	ACTACGT	TTAAAAG	AAAATGAGTC
1930					
AAAAAAAAAAAAAA					

FIG. 3-2

APPROVED BY DRAFTSMAN	O.G. FIG. CLASS / SUBCLASS
-----------------------------	-------------------------------

07/06/62
810,560

GGAGGTATAGGAGCTCTTCGATTTAGCAAACCAGGAGTCCGAAGATCTAAGGAGAGCTGGGGTTTACTCCAGAGCTCGAGCAGTCCCAAGACCTGGTCTTGACTCAGAGTTA
GACTCCACTCAGAGGCTGACTGTCTCCAGGGTCTACACCTCTAAGGGCAGACTGGGCTCAAGCAGACTGCCGTTCTATGGGATGAGCCTCACAGGGCAGCCAGTTGGGATGGGT
TGAGGTTGGCTGAGACATCAGAAACCAAGTCAAATGCCTCAACCAGTAGAAAATT
CACCGCCCGAGAGCTAAGGTTGGTGGACATTAGGTTGGTGTACCCAGGAGCTAAC
AGTGTCTCTGAGCCCCAGCTCCTCTGCCCCACCCACATCTCAGTGTGCTTCCTC
TCAAGGCACAGCTGTAGTGGCCAGGGGGCTCATTATTTGCTCCTGGCAGTAG
GAGGAAGAGAATGAATGTCTCTCATGGGCTTCTTAGGAATGTGGAACTTTTCCAG
AAGTCTATGTCTTTAGTTGTGGTCACTTGCCCTCCTGAACCACCTTCCTGAC
TCCTGGACAGGATGTGCACTGATGAGCTTAGCTTGGGGATCTAATAGTGA
GCCCTTTGAGAAGGTGACATTGAAACCAAGGCTTGAGCAGACACAACAAAGATTGAGG
GAGGGCATTGCAAGGTGGAGGAAACGGCACATGCAAGAGCCCTGCGTGGGAGTGAGCTG
GTGTTGGTCAATCAGTTGTCAAGACACCCGGCCCTGTCAGCAGGCACAGCCTGGGCC
TGCTCTGAGTATGACAGAGAGCCCTGGGAAGTTGTAGGTGGAGGAAGACAGGT
CTAGGAAAAGCAATCCCTCTGTTGTTGGGGTGAAGGAAGGTTGCAAGTGTGAGAG
AGAGACAAGACAGACAGACACTCTCAATGTTACAGTGTGCTAGGGCCCTGACCC
AATGCTCCAATTACGTAGTTCTGAAAACCCCTGTATCATTTCACTACTCAAAGA
AACCTCGGGAGTGTCTCTGAAAGGT
CTTCTGCTGGTGGTGTGATGGTTGCTTGTCCAGGCCCTGCCCCATCCTCTGCC
CTGCAGAGGGATGAGTGTGTTGGGCCACAGGTTGAGGTTGTTCATAGCAGATCT
TTGAGCAGGGCGCTGCACTGGCCTGTGAGGCTGGAGGGTTGATCCCTATGG
AATCCAGGCAGATGTAGCATTAAACAACACACGTGTATAAAAGAAACCAGTGTCCGCAG
AAGGTTCCAGAAAGTATTATGGGATAAGACTACATGAGAGAGGAATGGGCATTGGCACC
TCCCTAGTAGGGCTTGTGGGGTAGAAATGAGTTAAGGCAGGTTAGACCCCTG
ACTGGCTTTGAATCGGAAATTACCCCCCAGCCGTTGTGCTTCATTGCTGTTACA
TCACTGCCTAAGATGGAGGAACCTTGATGTTGTTCTCCTCACTGGCTCT
GCTCTTCACCTCCTGTCAAT

;intron=exon

GCAGAGAACAGCAGCAGCGACCAGAGGCAGGCCGTGA
A E N S S S D Q R Q A C
AGAACGACGAGCTGTATGTCAGCTCCGAGACCTGGCAG
K H E L Y V S F R D L G W Q

;exon=intron

GTCGTCTGGGTGTGGGCCCTCTGGCGTGGGCTCCACAGGCAGCGGGTGCTGCTCA
GTCTTGTCTCATCTGCCAGTTAAGACTCCAGTATCAAGTGGCCTCGCTAGGAAAG
GTACTGGCTAAGGATACAGG...
GGAGCCAGCATGGGTGAGGTTAAGGTAAGTGTGACCCAGTGTGAG
CTGATGATTGCTCACACGGAGCTCTCTGTGCGCCTCTGTCCAGAACACAGC
CATGGATGTCCATTAGGATCAGCCAAGCCCCGTTGTCTTCATTTTATTATGT
TTTTTAGAAATGGGTCTTGCTCTGTCACCCAGGCTGGGTGAGTGTGATCATAGC
TCACCGCAGCTTGACGCCGCTTCCACTCAGTCTACTAAGCTGGACTATAGGCCAG
ACTATAGAGTGGTCTTCTTCCATTCTTGGGACCATGAGAGGCCACCATGTTCT
GCCCTGCTGGGCCCTGCTGCTCAGAAGGCATGGTCTGAGGCTTCAACCTGGTGTGAG
CCTCGTGGTGGTTCTTCAGCATGGGTGGGATGCTGTGCTCAGGCTTGTG
TTCCACACTCTCTCCTCAG

;intron=exon

FIG. 1A-1

APPROVED	J.G. FIG.	
BY	CLASS	SUBCLASS
DRAFTSMAN		

07/660162
810,560

GACTGGATCATCGCGCCTGAAGGCTACGCCGCCT
 D W I I A P E G Y A A
 ACTACTGTGAGGGGGACTGTGCCTTCCCTCTGAACCTCCTACATGAACGCCACCAACCACG
 Y Y C E G E C A F P L N S Y M N A T N H
 CCATCGTGCAGACGCTG
 A I V Q T L
 ;exon=intron

GTGGGTGTACGCCATCTGGGTGTGGTACCTGGCCGGC
 AGGCTGCGGGGCCACCAGATCTGCTGCCTCCAAGCTGGGGCTGAGTAGATGTCAGGCC
 ATTGCCATGTCATGACTTTGGGGCCCTTGCCTGTTAAAAAAATCAAAATTGTA
 CTTATGACTGTTGGTAAAGAGGAGTATAATCTGCACCCCTGGAGTTATT
 CTCTAACTTAAAGTAACAAAGGGTGTGGCTCCTTGAGGATGCTTGTAGTATT
 GTGGGTGCTGTTACGGTGCCTAAGGACACTGGGCCCTGCTCATTTCAGTAGAGGA
 AACAGTAAACAGATGAGAAATTCACTGAGGGCACAGTGATCAGAAGCAGGCCAGCAG
 GATAATGGGATGGAGAGATGAGTGGGACCCATGGCCATTCAAGTAAATTCACTG
 GGTACCAAGGAAGATTCCATGTGATAATGAGATTAACGTGCCAGTCACGGCAGACTCA
 GTAGGTGTTATTCTGCTTGCAACAGCAACCATAGTTGATAAGAGCTGTTAGGGATT
 TGTCCCTTTGCTTAGAATCCAAGGTCAAGGACCTGGTTATGTAGCTCCCTGTCATGAA
 CATCATGAGCTTCCCTGCCTACTGATCATCCACCTGCCCTGAATGCTTCTAGTGAC
 AGAGAGCTCACTACCAAGGACTACTCCCTCCTTCATTAGTAATCTGCCCTCTTCTT
 TTGCTCCCTGCTCTGTGTTAAGTCTGGAGAAAATCTCATCTATCCCTTCTTGT
 TCTGCTCTTGAGGGCAGGGTTTTGTTCTGTTTAAGTGTGGTTTC
 CAAAGCCCTTGCTCCCCCTCAATTGAAACTTCAAAGCCTCATTGGGATTGAAGGTCC
 TTAGGCTGAAACAGAAGAGTCCTCCCCAACCTGTTCCCTGGCTGGATGTCGTGCTG
 TGCAGTATCCCTGGAGGTGCCAGGCATGTCCTCCGGCTGCCAGGGACACATCT
 ATCCTCTCCAACCCCTGCCCTCATGGCCCATGGAACAGGAGTGCCATGCCCTGTC
 ACCTACTTCCATCAGTATTTCACCAAGAGATCTGCAGGATCAAAGTGAATTCTCCAGGGAT
 TGTGAAATGATGCGATTGGTGTGTTAAAAGGGGCAACTGTCTTAGAGAGTCCT
 GATGAAATGCTTCAGAGGAATGAGCTGATGGCTGGAATTGCTTAAAATCATCAAG
 GTGGAGCAGGTGGGAAGGGTATGGATGTAAGAGTTGAAATTGTCATCATAAAATG
 TGTAAAAGCATGCTGGCTATGTCAGCAGTCAGCCTGGAGGTGTTAACAGAGTGCCA
 GTCACTGATGTCAGGCTGGCACCTACAGTGTGAAACCCAGAACAGTTCACGTTGAA
 AACACAGGACAGTGAATCTGGCCCTGTCTGAACACGTGGCAGATCTGCTAACACT
 GATCTGGTTGGCTGCCGTCAAGCTAGGTTGAGTGGCGGCTTCCCTAGTTGCTTAGT
 CCCCCTATTCCCTATTGCTTACCTCGGTCTATTGCTATCAGTGGACCTCACGAGG
 CACTCATAGGCATTGAGCTATGTCAGTGGCTCCCTGAACTCCTCTGTAAGGTGCAAGAAC
 GTCCATGAGCAAGATGGGAGCATTCTAGTGGTCCAGTCAGGAGACATTACGCAACT
 TACAGTGCACAGGGCAGTCCCCAACAGAGAACACTGTCCTGAATGTCGGACCTGG
 CCCTCCCTCCCCACTGTATAATGAAAACCTCTATGCTTGTCCCCCTGTCGAA
 ACAGGGATAATCCCAGAACTGAGTTGTCATGAAAGTGTCTAGAACAGGGAGTGT
 CTTGGGAGTGTACCTGCAGTCATTGCTTATGCCAGACAGGATGTTCTTATAGAAA
 CGTGGAGGCCAGTTAGAACGACTCACCGCTCTACCAGTCCCATGTTGGTGTGTT
 TTCA
 ;intron=exon
 GTCCACTTCATCAACCCGGAAACGGTGCCCAAGCCCTGCTGTGCGCCACGCAGC
 V H F I N P E T V P K P C C A P T Q
 TCAATGCCATCTCCGTCTACTTCGATGACAGCTCCAACGTCTGAAGAAATACA
 L N A I S V L Y F D D S S N V I L K K Y
 GAAACATGGTGGTCCGGGCTGTGGCTGCCACTAGCTCCCGAGAACATT
 R N M V V R A C G C H

FIG. 1A-2

APPROVED	O. S. FIG.	
BY	CLASS	SUBCLASS
CRAFTSMAN		

07/660,162
810,560

10	20	30	40	50	60
GGTGCGGGCCGGAGCCCGGAGCCGGTAGCGCTAGAGCCGGCGATGACGTGCGC					
				M H V R	
70	80	90	100	110	120
TCACTGCGAGCTGCGGCCACAGCTCGTGGCGCTCTGGCACCCCTGTTCTGCTG					
S L R A A A P H S F V A L W A P L F L L					
130	140	150	160	170	180
CGCTCCGCCCTGGCCGACTTCAGCCTGGACAACGAGGTGCACTCGAGCTTCATCCACCGG					
R S A L A D F S L D N E V H S S F I H R					
- - - - -					
190	200	210	220	230	240
CGCCTCCGAGCCAGGAGCGGGAGATGCGAGCGAGATCCTCTCCATTGGGCTTG					
R L R S Q E R R E M Q R E I L S I L G L					
250	260	270	280	290	300
CCCCACCGCCCGGCCACCTCCAGGGCAAGCACAACTCGCACCCATGTTCATGCTG					
P H R P R P H L Q G K H N S A P M F M L					
310	320	330	340	350	360
GACCTGTACAACGCCATGGCGGTGGAGGAGGGCGGGGGGGGGGGGGGGGGCTTC					
D L Y N A M A V E E G G G G P G G Q G F S					
370	380	390	400	410	420
TACCCCTACAAGGCCGTCTCAGTACCCAGGGCCCCCTCTGCCAGCCTGCAAGATAGC					
Y P Y K A V F S T Q G P P L A S L Q D S					
430	440	450	460	470	480
CATTTCTCACCAGCGACGCCGACATGGTCATGAGCTTCGTCACACCTCGTGGAACATGACAAG					
H F L T D A D M V M S F V N L V E H D K					
490	500	510	520	530	540
GAATTCTCCACCCACGCTACCACCATCGAGAGCTTCCGGTTGATCTTCCAAGATCCA					
E F F H P R Y H H R E F R F D L S K I P					
550	560	570	580	590	600
GAAGGGGAAGCTGTCACGGCAGCCGAATCCGGATCTACAAGGACTACATCCGGAACCGC					
E G E A V T A A E F R I Y K D Y I R E R					
610	620	630	640	650	660
TTCGACAAATGAGACGTTCCGGATCAGCGTTTATCAGGTGCTCCAGGAGCACTTGGGCAGG					
F D N E T F R I S V Y Q V L Q E H L G R					
670	680	690	700	710	720
GAATCGGATCTTCCCTGCTCGACAGCGTACCCCTGGGCTCGGAGGAGGGCTGGCTG					
E S D L F L L D S R T L W A S E E G W L					
730	740	750	760	770	780
GTGTTGACATCACAGCCACAGCAACCACTGGGTGGTCATCCGCGGACAACCTGGGC					
V F D I T A T S N H W V V N P R H N L G					
790	800	810	820	830	840
CTCGAGCTCTGGAGACGCTGGATGGCGAGAGCATCAACCCCAAGTGGCGGGCTG					
L Q L S V E T L D G Q S I N P K L A G L					
850	860	870	880	890	900
ATTGGGGGGCACGGGCCAGAACACAAGCAGCCCTCATGGTGGCTTCTCAAGGCCACG					
I G R H G P Q N K Q P F M V A F F K A T					
910	920	930	940	950	960
GAGGTCCACTTCCGCAGCATCCGGTCCACGGGAGCAAACAGCGCAGCCAGAACCGCTCC					
E V H F R S I R S T G S K Q R S Q N R S		*	*	*	*
970	980	990	1000	1010	1020
AAGACGCCAAGAACCAAGGAGCCCTGCGGATGGCAACGTGGCAGAGAACAGCAGCAGC					
K T P K N Q E A L R M A N V A E N S S S		*	*	*	*

FIG. 1B-1 OP1 cDNA

APPROVED	O.G. FIG.	
BY	CLASS	SUBCLASS
DRAFTSMAN		

07/6/1980
810,560

1030 1040 1050 1060 1070 1080
 GACCGAGGGCAGGCCTGTAAGAACGACGAGCTGTATGTCAGCTTCCGAGACCTGGGCTGG
 D Q R Q A C K K H E L Y V S F R D L G W
 1090 1100 1110 1120 1130 1140
 CAGGACTGGATCATCGCGCTGAAGGCTACGCCCTACTACTGTGAGGGGGAGTGTGCC
 Q D W I I A P E G Y A A Y Y C E G E C A
 1150 1160 1170 1180 1190 1200
 TTCCCTCTGAACCTCATGAACGCCACCAACCACGCCATCGTGCAGACGCTGGTCCAC
 F P L N S Y M N A T N H A I V Q T L V H
 1210 1220 1230 1240 1250 1260
 TTCAACCCGGAAACGGTGCCAACGCCCTGCTGTGCCCCACGCAGCTCAATGCCATC
 F I N P E T V P K P C C A P T Q L N A I
 1270 1280 1290 1300 1310 1320
 TCCGTCCCTACTTCGATGACAGCTCCAACGTCATCCTGAAGAAATACAGAAACATGGT
 S V L Y F D D S S N V I L K K Y R N M V
 1330 1340 1350 1360 1370 1380
 GTCCGGGCCCTGTGGCTGCCACTAGCTCCCTGGAGAATTAGACCCCTTGGGCCAAGTT
 V R A C G C H *
 1390 1400 1410 1420 1430 1440
 TTCTGGATCCTCCATTGCTCGCCTGGCCAGGAACCAGCAGACCAACTGCCTTTGTGAG
 1450 1460 1470 1480 1490 1500
 ACCTCCCCCTCCCTATCCCCAACTTTAAAGGTGTGAGAGTATTAGGAAACATGAGCAGCA
 1510 1520 1530 1540 1550 1560
 TATGGCTTTGATCAGTTTCAGTGGCAGCATCCAATGAACAAAGATCCTACAAGCTGTG
 1570 1580 1590 1600 1610 1620
 CAGGCAAAACCTAGCAGGAAAAAAACAAACGCATAAAGAAAAATGCCGGGCCAGGTCA
 1630 1640 1650 1660 1670 1680
 TTGGCTGGGAAGTCTCAGCCATGCACGGACTGTTCCAGAGGTAATTATGAGCGCCTAC
 1690 1700 1710 1720 1730 1740
 CAGCCAGGCACCCAGCCGTGGGAGGAAGGGGGCGTGGCAAGGGGGCACATTGGTGT
 1750 1760 1770 1780 1790 1800
 CTGTGCGAAAGGAAAATTGACCCGGAAGTCCGTAAATGTACAATAAACGAATG
 1810 1820
 AATGAAAAAAAAAAAAAA

FIG. 1B-2 OPL CDNA

APPROVED	D.G. FIG.	
BY	CLASS	SUBCLASS
GRAFTSMAN		

07/660,160
810,560

FIGURE 1C

APPROVED	O.G. FIG.	
BY	CLASS	SUBCLASS
DRAFTSMAN		

07/6/1962
810,560

10 20 30 40 50 60
 TCGACTCTAGAGTGTGTCA GC ACTTGGCTGGGACTTCTGAACTTG CAGGGAGAATA
 70 80 90 100 110 120
 ACTTGC GCACCCCACTTGC GCGCGGTGC CTTGCCCCAGCGGAGCCTGCTTCGC CATCTC
 130 140 150 160 170 180
 CGAGCCCCACCGCCCCCTCCACTCCTCGGCCTTGCCCCGACACTGAGACGCTGTTCCCAGCG
 190 200 210 220 230 240
 TGAAAAGAGAGAGACTGCGCGCCGGCACCCGGAGAAGGAGGAGGCAAAGAAAAGGAACGG
 250 260 270 280 290 300
 ACATT CGGT CTTGCGCCAGGT CTTGACCAGAGTTTCCATGTGGACGCTTTCAA
 310 320 330 340 350 360
 TGGACGTGTCCCCCGTGCTTCTTAGACGGACTGCGTCTCCTAAAGGTGACCATGGTG
 M V
 370 380 390 400 410 420
 GCCGGGACCCGCTGTCTCTAGCGTTGCTGCTCCCCAGGT CCTCCTGGCGGCGCGCT
 A G T R C L L A L L P Q V L L G G A A
 430 440 450 460 470 480
 GGCCTCGTTCGGAGCTGGGCCGCAGGAAGTTCGCGCGCGTCGT CGGGCCGCCCTCA
 G L V P E L G R R K F A A A S S G R P S
 490 500 510 520 530 540
 TCCCAGCCCTCTGACGGAGCTTGAGCGAGTTCGAGTTGGCTGCTCAGCATGTT CGGC
 S Q P S D E V L S E F E L R L L S M F G
 550 560 570 580 590 600
 CTGAAACAGAGACCCACCCCGCAGCAGGGACGCCGTGGT GCCCCCTACATGCTAGACCTG
 L K Q R P T P S R D A V V P P Y M L D L
 610 620 630 640 650 660
 TATCGCAGGC ACTCGGGTCAGCGGGCTCACCGCCCGAGACCACCGGTTGGAGAGGGCA
 Y R R H S G Q P G S P A P D H R L E R A
 670 680 690 700 710 720
 GCCAGCCGAGCCAACACTGTGCGCAGCTTCCACCATGAAAGAATCTTGGAAAGAACTACCA
 A S R A N T V R S F H H E E S L E E L P
 730 740 750 760 770 780
 GAAACGAGTGGAAAACAACCCGGAGATTCTCTTTAATTAAAGTTCTATCCCCACGGAG
 E T S G K T T R R F F F N L S S I P T E
 790 800 810 820 830 840
 GAGTTTATCACCTCAGCAGAGCTTCAGGTTCCGAGAACAGATGCAAGATGCTTAGGA
 E F I T S A E L Q V F R E Q M Q D A L G
 850 860 870 880 890 900
 AACAA TAGCAGTTCCATACCGAATTAAATTATGAAATCATAAAACCTGCAACAGCC
 N N S S F H H R I N I Y E I I K P A T A
 910 920 930 940 950 960
 AACTCGAAATCCCCGTGACCA GCTTGGACACCAGGTGGTGAATCAGAATGCAAGC
 N S K F P V T S L L D T R L V N Q N A S
 970 980 990 1000 1010 1020
 AGGTGGGAAAGTTTGATGTCACCCCGCTGTGATGCGGTGGACTGCACAGGGACACGCC
 R W E S F D V T P A V M R W T A Q G H A
 1030 1040 1050 1060 1070 1080
 ACCATGGATT CGTGGTGAAGTGGCCACTTGGAGGAGAACAGGTGTCTCCAAGAGA
 N H G F V V E V A H L E E K Q G V S K R

FIG. 2-1

APPROVED	O. G. FIG.
BY	CLASS 303 CLASS
DRAFTSMAN	

07/66
810,560

1090 1100 1110 1120 1130 1140
 CATGTTAGGATAAGCAGGTCTTGACCAAGATGAACACAGCTGGTCACAGATAAGGCCA
 H V R I S R S L H Q D E H S W S Q I R P
 1150 1160 1170 1180 1190 1200
 TTGCTAGTAACCTTGGCCATGATGGAAAAGGGCATCCTCTCCACAAAAGAGAAAAACGT
 L L V T F G H D G K G H P L H K R E:K R
 1210 1220 1230 1240 1250 1260
 CAAGCCAAACACAAACAGCGGAAACGCCCTAACGCTGTAAGAGACACCCCTTGATC
 Q A K H K Q R K R L K S S C K R H P L Y
 1270 1280 1290 1300 1310 1320
 GTGGACTTCAGTGACGGGGTGGAAATGACTGGATTGTGGCTCCCCCGGGGTATCACGCC
 V D F S D V G W N D W I V A P P G Y H A
 1330 1340 1350 1360 1370 1380
 TTTTACTGCCACGGAGAATGCCCTTCCTGGCTGATCATCTGAACCTCCACTAATCAT
 F Y C H G E C P F P L A D H L N S T N H
 1390 1400 1410 1420 1430 1440
 GCCATTGTTAGACGTTGGTCAACTCTGTTAACCTCAAGATTCTAACGGCATGCTGTGTC
 A I V Q T L V N S V N S K I P K A C C V
 1450 1460 1470 1480 1490 1500
 CCGACAGAACTCAGTGCTATCTCGATGCTGTACCTTGACGAGAATGAAAAGGTTGTATTA
 P T E L S A I S M L Y L D E N E K V V L
 1510 1520 1530 1540 1550 1560
 AAGAACTATCAGGACATGGTTGTGGAGGGTTGGGGTGTGCTAGTACAGCAAAATTAAA
 K N Y Q D M V V E G C G C R *
 1570 1580 1590
 TACATAAAATATATATATATATATTTAGAAAAAGAAAAAAA

FIG. 2-2

APPROVED	C.G. FIG.	
BY	CLASS	SUBCLASS
DRAFTSMAN		

07/660-162
810,560

FIG. 3-1

APPROVED	ORG. FIG.
BY	1155 SUBCLASS
RAFTSMAN	

07/60762
810,560

1150	1160	1170	1180	1190	1200
CACCA	GGGCC	CAGCAT	GTCA	GGATTAGCC	GATCGTTACCTCA
H Q G	Q H V	R I S	R S L	P Q G S	G N W A
1210	1220	1230	1240	1250	1260
CAGCT	CCGGCCCC	CTCGGT	CACCTTGGCC	CATGATGGCC	GGGGCCATGCCTTGACCCGA
Q L R	R P L	L V T	F G H	D G R G	H A L T R
1270	1280	1290	1300	1310	1320
CGCCGGAGGGCCA	AAGCGTAG	CCCTAAC	ACTCAC	AGCGGGCC	AGGAAGAAGAATAAG
R R R	A::K R	S P K	H H S	Q R A R	K K N K
1330	1340	1350	1360	1370	1380
AACTGCC	GGCGCC	ACTCGCT	CTATGTGG	ACTTCAGC	GATGTGGCTGGAATGACTGGATT
N C R	R R H	S L Y	V D F	S D V G	W N D W I
1390	1400	1410	1420	1430	1440
GTGGCCCC	CACCGG	CTACCGGC	CTTCA	CTACTGCC	CATGGGACTGCCCTTCCACTGGCT
V A P	P G Y	Q A F	Y C H	G D C P	F P L A
1450	1460	1470	1480	1490	1500
GACCAC	CTCA	ACTCA	ACCAACC	CATGCC	ATTGTGCAGACCC
D H L	N S T	N H A	I V Q	T L V	N S V N S
1510	1520	1530	1540	1550	1560
AGTAT	CCCCAAAGC	CTGTGTG	CCACTG	GA	ACTGAGTGC
S I P	K A C	C V P	T E L	S A I	S M L Y L
1570	1580	1590	1600	1610	1620
GATGAGT	TATGATA	AGGTGGT	ACTGAAA	ATTATCAGGAG	ATGGTAGAGGGATGTGG
D E Y	D K V	V L K	N Y Q	E M V	V E G C G
1630	1640	1650	1660	1670	1680
TGCCG	CTGAG	ATCAGG	CAGTC	CTTGAGG	ATAGACAGATA
C R *					
1690	1700	1710	1720	1730	1740
CACATAC	ACCA	CACACAC	ACACG	TTCC	CATCC
1750	1760	1770	1780	1790	1800
TTATAGAT	GGACT	TTTATT	TTA	AAAAA	AAAAAATGG
1810	1820	1830	1840	1850	1860
CACCT	TGAC	TTATT	TATGACT	TTACGTG	CAAATGTTGAC
1870	1880	1890	1900	1910	1920
TGAC	AAA	ATAT	TTATA	ACTACGT	TATAAAAGAAAAA
1930					
AAAAA					

FIG. 3-2